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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,736	08/04/2006	Hamid Saadatmanesh	122170.00025US	5539

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EXAMINER	
BELL, WILLIAM P	

ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
05/12/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pat-dept@quarles.com

Office Action Summary	Application No.	Applicant(s)	
	10/597,736	SAADATMANESH, HAMID	
	Examiner	Art Unit	
	WILLIAM P. BELL	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-18 and 21-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-18 and 21-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 October 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 10-13, 16-18, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minayoshi (U.S. Patent No. 6,890,461, already of record) in view of Thom (German Patent No. DE-19625259, already of record). A machine translation of Thom was provided for convenience in the previous Office action; all text citations to Thom refer to paragraph numbers in the machine translation rather than the original German text. Regarding claim 10, Minayoshi teaches a method for repairing, in situ, a hollow support structure (see column 1, lines 12-14 and 54-58) that has a deteriorated portion (see column 1, lines 15-24, wherein the area at and below the ground surface is the deteriorated portion) and an access opening (see column 1, lines 56-58), comprising the steps of placing a high tensile strength material in the hollow support structure to at least a depth such that the high tensile strength material extends over the depth of the deteriorated portion (see column 10, lines 51-54, wherein the aramid rods are high tensile strength material; see Figure 8, wherein rods 307a extend through both the above ground and below ground section of the hollow pole); pouring an aggregate material into the hollow support structure to incorporate the high strength material in to

the aggregate that fills the hollow support structure at least over the depth of the deteriorated portion (see column 12, lines 29-38); and allowing the aggregate to cure in situ (see column 14, line 51). Minayoshi teaches pouring the aggregate in an amount and to a depth such that the epoxy resin aggregate fills the hollow support structure at least over the depth of the deteriorated portion (see Figure 8). Minayoshi does not teach providing a high tensile strength sleeve in the hollow support structure. Minayoshi does teach providing a high tensile strength material in the form of a sleeve around the exterior of the hollow pole in those situations where the in ground portion of the hollow pole can be excavated (see column 15, lines 11-18). Thom teaches a method of reinforcing a hollow pole (see page 1, paragraph 8) comprising the steps of placing a fabric sleeve having a mouth (see tubular sleeve 2 in Figure 1) through an access opening in the hollow pole (see page 2, paragraph 23) and forcing it into the interior of the pole so that it extends into the in ground portion to a depth that extends of the deteriorated portion of the pole (see page 3, paragraph 1), expanding the sleeve until it contacts the inner surface of the pole (see page 3, paragraphs 4-5), and solidifying the sleeve (see page 3, paragraph 10). Thom teaches that the sleeve comprises a high tensile strength material (see page 2, paragraph 12 and page 3, paragraph 12) which is impregnated with epoxy resin (see page 2, paragraph 14 and page 3, paragraph 16). It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the methods taught by Minayoshi and Thom for the benefit of further reinforcing the hollow pole, especially in those situations in which the in ground portion of the pole cannot be excavated. While Thom does not teach locating the mouth (i.e.,

the top) of the sleeve in the access opening, it would have been obvious to one of ordinary skill in the art at the time of the invention to have done so for the convenience of being able to control the flow of the aggregate into the center of the sleeve.

Regarding claim 11, Minayoshi teaches a method wherein the hollow support structure has an in ground portion and an above ground portion (see Figure 8), and wherein the hollow support structure has a deteriorated portion extending at least partially into the in ground portion (see column 1, lines 15-24), and an access opening in the above ground portion (see openings 305a and 305b in Figure 8).

Regarding claim 12, Minayoshi teaches a method wherein the step of pouring the aggregate into the hollow support comprises pouring an epoxy resin aggregate (see column 12, lines 33-35) in an amount and to a depth such that the epoxy resin aggregate fills the hollow support structure at least over the depth of the deteriorated portion and the epoxy resin aggregate extends to the access opening (see Figure 8). Minayoshi does not teach the step of providing a high tensile strength sleeve in the hollow support structure. Minayoshi does teach providing a high tensile strength material in the form of a sleeve around the exterior of the hollow pole in those situations where the in ground portion of the hollow pole can be excavated (see column 15, lines 11-18). Thom teaches a method of reinforcing a hollow pole (see page 1, paragraph 8) comprising the steps of placing a fabric sleeve having a mouth (see tubular sleeve 2 in Figure 1) through an access opening in the hollow pole (see page 2, paragraph 23) and forcing it into the interior of the pole so that it extends into the in ground portion to a depth that extends of the deteriorated portion of the pole (see page 3, paragraph 1),

expanding the sleeve until it contacts the inner surface of the pole (see page 3, paragraphs 4-5), and solidifying the sleeve (see page 3, paragraph 10). Thom teaches that the sleeve comprises a high tensile strength material (see page 2, paragraph 12 and page 3, paragraph 12) which is impregnated with epoxy resin (see page 2, paragraph 14 and page 3, paragraph 16). It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the methods taught by Minayoshi and Thom for the benefit of further reinforcing the hollow pole, especially in those situations in which the in ground portion of the pole cannot be excavated. While Thom does not teach locating the mouth (i.e., the top) of the sleeve in the access opening, it would have been obvious to one of ordinary skill in the art at the time of the invention to have done so for the convenience of being able to control the flow of the aggregate into the center of the sleeve.

Regarding claim 13, Minayoshi does not teach providing a fabric sleeve. Thom teaches a method wherein the fabric sleeve is expanded by use of the "memory effect" of the sleeve material (see page 2, paragraphs 3-5), but can also be expanded by other methods such as inflation or mechanical spreading (see page 1, paragraph 14). Closing the bottom end of the sleeve and pushing the sleeve into the hollow support with a rod represents a much simpler method of inserting the sleeve into the pole than is taught by Thom. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the method taught by Minayoshi and Thom by closing the bottom of the sleeve and pushing it into place with a rod for the benefit of eliminating the need for and cost associated with the “memory effect” material.

Regarding claims 16 and 17, Minayoshi teaches that in situations where the hollow pole is located such that the in ground portion can be excavated, an aramid fiber seat may be wrapped around the exterior of the pole to provide further reinforcement (see column 15, lines 11-18). Minayoshi teaches that this step may be performed after the interior of the pole is reinforced (see column 15, line 11). One of skill in the art recognizes that hollow poles such as those taught by Minayoshi may at times deteriorate to the point that holes are formed in the annular wall of the pole, allowing water to penetrate the interior of the pole. In such situations, it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the aramid fiber seat to the exterior of the pole before reinforcing the interior of the damaged area could be cleaned of any debris which may have penetrated the pole and so that the aggregate would not leak out of the hole.

Regarding claim 18, Minayoshi teaches a method of forming in situ a dowel structure that reinforces a portion of a hollow support structure (see column 1, lines 54-56 and Figure 8, wherein the reinforcing structure forms a dowel), comprising the steps of determining the depth of the portion of the hollow support structure that is to be reinforced (see column 11, lines 41-44 and 52-57; see column 12, lines 23-28); placing a high tensile strength reinforcement component inside the hollow support structure such that the high tensile strength component extends at least over the depth of the portion of the hollow support structure that is being reinforced (see column 10, lines 51-54; see column 12, lines 23-28); pouring into the hollow support structure an epoxy aggregate that substantially fills the hollow support structure at least over the depth of

the portion of the hollow support structure that is being reinforced (see column 12, lines 29-35); and allowing the epoxy aggregate to cure in situ (see column 14, line 51). Minayoshi teaches pouring the aggregate in an amount and to a depth such that the epoxy resin aggregate fills the hollow support structure at least over the depth of the deteriorated portion (see Figure 8). Minayoshi does not teach providing a high tensile strength sleeve in the hollow support structure. Minayoshi does teach providing a high tensile strength material in the form of a sleeve around the exterior of the hollow pole in those situations where the in ground portion of the hollow pole can be excavated (see column 15, lines 11-18). Thom teaches a method of reinforcing a hollow pole (see page 1, paragraph 8) comprising the steps of placing a fabric sleeve having a mouth (see tubular sleeve 2 in Figure 1) through an access opening in the hollow pole (see page 2, paragraph 23) and forcing it into the interior of the pole so that it extends into the in ground portion to a depth that extends of the deteriorated portion of the pole (see page 3, paragraph 1), expanding the sleeve until it contacts the inner surface of the pole (see page 3, paragraphs 4-5), and solidifying the sleeve (see page 3, paragraph 10). Thom teaches that the sleeve comprises a high tensile strength material (see page 2, paragraph 12 and page 3, paragraph 12) which is impregnated with epoxy resin (see page 2, paragraph 14 and page 3, paragraph 16). It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the methods taught by Minayoshi and Thom for the benefit of further reinforcing the hollow pole, especially in those situations in which the in ground portion of the pole cannot be excavated. While Thom does not teach locating the mouth (i.e., the top) of the sleeve in the access

opening, it would have been obvious to one of ordinary skill in the art at the time of the invention to have done so for the convenience of being able to control the flow of the aggregate into the center of the sleeve.

Regarding claim 21, Minayoshi teaches a method wherein an epoxy resin aggregate is poured into a hollow support structure through an opening in the structure and to a desired depth (see column 12, lines 29-35). Minayoshi does teach providing a high tensile strength material in the form of a sleeve around the exterior of the hollow pole in those situations where the in ground portion of the hollow pole can be excavated (see column 15, lines 11-18). Thom teaches a method of reinforcing a hollow pole (see page 1, paragraph 8) comprising the steps of placing a fabric sleeve having a mouth (see tubular sleeve 2 in Figure 1) through an access opening in the hollow pole (see page 2, paragraph 23) and forcing it into the interior of the pole so that it extends into the in ground portion to a depth that extends of the deteriorated portion of the pole (see page 3, paragraph 1), expanding the sleeve until it contacts the inner surface of the pole (see page 3, paragraphs 4-5), and solidifying the sleeve (see page 3, paragraph 10). Thom teaches that the sleeve comprises a high tensile strength material (see page 2, paragraph 12 and page 3, paragraph 12) which is impregnated with epoxy resin (see page 2, paragraph 14 and page 3, paragraph 16). It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the methods taught by Minayoshi and Thom for the benefit of further reinforcing the hollow pole, especially in those situations in which the in ground portion of the pole cannot be excavated. While Thom does not teach locating the mouth (i.e., the top) of the sleeve in the access

opening, it would have been obvious to one of ordinary skill in the art at the time of the invention to have done so for the convenience of being able to control the flow of the aggregate into the center of the sleeve.

Regarding claim 22, Thom teaches a method wherein the fabric sleeve is expanded by use of the "memory effect" of the sleeve material (see page 2, paragraphs 3-5), but can also be expanded by other methods such as inflation or mechanical spreading (see page 1, paragraph 14). Closing the bottom end of the sleeve and pushing the sleeve into the hollow support with a rod represents a much simpler method of inserting the sleeve into the pole than is taught by Thom. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the method taught by Minayoshi and Thom by closing the bottom of the sleeve and pushing it into place with a rod for the benefit of eliminating the need for and cost associated with the "memory effect" material.

3. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Minayoshi (US-6890461) and Thom (DE-19625259) as applied to claim 12 above, and further in view of Hillyer (U.S. Patent No. 3,477,979, already of record). Minayoshi teaches a method wherein the aggregate is mixed from sand, gravel, and epoxy (see column 12, lines 33-38), but does not explicitly state that an epoxy hardener is used. However, it is well known in the art that epoxy resins require a hardener compound to initiate the crosslinking reaction which solidifies them. For example, Hillyer teaches an epoxy containing concrete which comprises 20-80% epoxy and 1-50% curing agent or hardener (see column 7, lines 20-25). It would have been

obvious to one of ordinary skill in the art at the time of the invention to have modified the method taught by Minayoshi with the hardener taught by Hillyer, since hardeners are required for proper utilization of epoxy resins. It further would have been obvious to one of ordinary skill in the art at the time of the invention to have optimized the composition of the epoxy aggregate taught by Minayoshi, including the relative amounts of epoxy, hardener, sand, and gravel, for the benefit of providing a suitable combination of stiffness of the solidified aggregate and adhesion of the aggregate to the hollow structure.

4. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Minayoshi (US-6890461) and Thom (DE-19625259) as applied to claims 10,18, and 21 above, and further in view of Trimble (U.S. Patent No. 4,923,203, already of record). Minayoshi, as modified by Thom, teaches a method wherein the sleeve comprises carbon fibers (see page 2, paragraph 12, where coal is a machine translation of the German word "Kohle" in reference to carbon fibers). While Minayoshi teaches the reinforcement of concrete poles, Thom teaches that metal poles may also be reinforced (see page 1, paragraph 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the method of Minayoshi and Thom to the reinforcement of metal poles as well as concrete poles, since metal poles are also known to suffer from corrosion and other forms of damage to their structure. In the art of composites fabrication, Trimble teaches providing a layer of glass fibers between metal materials and carbon fibers to prevent galvanic corrosion and improve adherence to the metal (see column 13, lines 55-68). It would have been obvious to

one of ordinary skill in the art at the time of the invention to have modified the sleeve taught by Thom with an outer layer of glass fibers, as taught by Trimble, for the benefit of preventing corrosion and improving adhesion (see Trimble, column 13, lines 55-68).

Response to Arguments

5. Applicant's arguments, see page 5, filed 3 February 2010, with respect to the objections to claims 12 and 17 and the rejection of claims 12-17 under 35 U.S.C. 112, second paragraph, have been fully considered and are persuasive. The objections and rejections of 3 August 2009 have been withdrawn.

6. Applicant's arguments filed 3 February 2010 have been fully considered but they are not persuasive. Applicant argues that Thom teaches away from the proposed modification of Minayoshi because Thom discloses that introducing steel to a mast pipe and filling its interior with concrete is undesirable. Examiner respectfully disagrees. First, it is noted that it is the primary reference, Minayoshi, which teaches filling the hollow structure with high strength rods and concrete. The secondary reference, Thom, teaches reinforcing a hollow structure with a curable high tensile strength sleeve disposed inside the structure. The proposed modification is the combination of the two reinforcement mechanism. Thus applicant's arguments are directed to the references individually. Second, Thom teaches that there may be difficulties associated with the method of Minayoshi, but does not sate that one should not use that method. Thom only teaches that his method may be preferable in certain circumstances. Since not all hollow poles have internal wires, including those illustrated by Minayoshi, there are

many circumstances in which Thom's advice would not be applicable. Thus Thom does not teach away from the proposed modification.

Applicant argues that one would not be motivated to combine the teachings of Minayoshi and Thom because Minayoshi allegedly already teaches a more than adequate reinforcement of the structure. Examiner respectfully disagrees. While Minayoshi discloses adequate safety factors for bending strength in some specific instances, the recited examples do not include all possible structures and actually point to a diminishing effect of the concrete reinforcement as the weight of the structure increases (see column 23, lines 59-63). This would suggest to one of skill in the art that additional reinforcement would be needed at high structure weights. Additional strength in structural applications is a strong motivational factor. While other factors such as economics may influence the decision on which of several possible methods of providing additional reinforcement would be implemented, the fact that Thom teaches that hollow structures can be reinforced by high tensile strengths sleeves provides sufficient motivation for one of skill in the art to consider the proposed combination.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM P. BELL whose telephone number is (571)270-7067. The examiner can normally be reached on Monday - Thursday, 8:00 am - 5:30 pm; Alternating Fridays, 8:00 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WILLIAM P BELL/
Examiner, Art Unit 1791

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